Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

Sunbobo Digital CO.LTD;

FCC ID:	**YGD-G2217**
Product Description:	**Car Media Player**
Model No.:	**G2217**
Supplementary Model No.:	**D2217 (This Model just different with colour)**

Prepared for:	**Sunbobo Digital CO.LTD;**
	Block D,12/F,Victorious Factory Bldg.35 Tseuk Luk Street, San Po Kong, Kowloon, Hong kong.
Prepared by:	**Bontek Compliance Testing Laboratory Ltd**
	1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China
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Report No.:	BCT11CR-0287E
Issue Date:	March 28, 2011
Test Date:	March 22~28, 2011

Test by:	**Reviewed By:**
Kendy Wang	Tony Wu

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	**Sunbobo Digital CO.LTD;**
Address of applicant:	Block D,12/F,Victorious Factory Bldg.35 Tseuk Luk Street, San Po Kong, Kowloon, Hong Kong.
Manufacturer:	**Sunbobo Digital CO.LTD;**
Address of manufacturer:	Block D,12/F,Victorious Factory Bldg.35 Tseuk Luk Street, San Po Kong, Kowloon, Hong Kong.

General Description of E.U.T

Items	Description
EUT Description:	Car Media Player
Model No.:	G2217
Supplementary Model No.:	D2217(This Model just different with colour)
Type of Modulation:	FHSS
Frequency Band:	2402 MHz ~ 2480 MHz
Number of Channels:	79
Channel Bandwidth:	1 MHz
Antenna Type:	Built-in Antenna
Rated Voltage:	DC 12 V

** The test data gathered are from the production sample provided by the manufacturer.*

1.2 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2009.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.207, and 15.247 rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

All measurement required was performed at laboratory of Bontek Compliance Testing Laboratory Ltd at 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China.

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 338263

BONTEK COMPLIANCE TESTING LABORATORY LTD. , EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March, 2008.

IC Registration No.: 7631A

The 3m alternate test site of BONTEK COMPLIANCE TESTING LABORATORY LTD. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on August 2009.

CNAS - Registration No.: L3923

BONTEK COMPLIANCE TESTING LABORATORY LTD. to ISO/IEC 17025:25 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.The acceptance letter from the CNAS is maintained in our files: Registration:L3923,February,2009.

TUV - Registration No.: UA 50145371-0001

BONTEK COMPLIANCE TESTING LABORATORY LTD. An assessment of the laboratory was conducted according to the"Procedures and Conditions for EMC Test Laboratories"with reference to EN ISO/IEC 17025 by a TUV Rheinland auditor. Audit Report NO. 17010783-001

2. SYSTEM TEST CONFIGURATION

The tests documented in this report were performed in accordance with ANSI C63.4-2009 and FCC CFR 47 Part 15 Subpart C.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

2.3 General Test Procedures

Conducted Emissions The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2009.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 List of Measuring Equipments Used

Test equipments list of SHENZHEN BONTEK ELECTRONIC TECHNOLOGY CO., LTD. .

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Calibration Date	Calibration Due Date
1	BCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2010-4-14	2011-4-13
2	BCT-EMC002	EMI Test Receiver	R&S	ESPI	100097	2010-4-14	2011-4-13
3	BCT-EMC003	Amplifier	HP	8447D	1937A02492	2010-4-14	2011-4-13
4	BCT-EMC004	Single Power Conductor Module	FCC	FCC-LISN-5-50-1-01-CISPR25	7101	2010-4-14	2011-4-13
5	BCT-EMC005	Single Power Conductor Module	FCC	FCC-LISN-5-50-1-01-CISPR25	7102	2010-4-14	2011-4-13
6	BCT-EMC006	Power Clamp	SCHWARZBECK	MDS-21	3812	2010-4-14	2011-4-13
7	BCT-EMC007	Positioning Controller	C&C	CC-C-1F	MF7802113	N/A	N/A
8	BCT-EMC008	`Electrostatic Discharge Simulator	TESEQ	NSG437	125	2010-4-14	2011-4-13
9	BCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2010-4-14	2011-4-13
10	BCT-EMC010	Fast Transient Noise Simulator	Noiseken	FNS-105AX	31485	2010-4-14	2011-4-13
11	BCT-EMC011	Color TV Pattern Genenator	PHILIPS	PM5418	TM209947	N/A	N/A
12	BCT-EMC012	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	608002	2010-4-14	2011-4-13
13	BCT-EMC013	N/A	N/A	N/A	N/A	N/A	N/A
14	BCT-EMC014	Capacitive Coupling Clamp	TESEQ	CDN8014	25096	2010-4-14	2011-4-13
15	BCT-EMC015	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2010-4-14	2012-4-13
16	BCT-EMC016	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2010-4-14	2012-4-13
17	BCT-EMC017	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2010-4-14	2012-4-13
18	BCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2010-4-14	2012-4-13
19	BCT-EMC019	Horn Antenna	SCHWARZBECK	BBHA9120A	B08000991-0001	2010-4-14	2012-4-13
20	BCT-EMC020	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	D-69250	2010-4-14	2011-4-13
21	BCT-EMC021	10dB attenuator	SCHWARZBECK	MTAIMP-136	R65.90.0001#06	2010-4-14	2011-4-13
22	BCT-EMC022	Electric bridge	Zentech	100 LCR METER	803024	N/A	N/A
23	BCT-EMC023	RF Current Probe	FCC	F-33-4	80	2010-4-14	2011-4-13

24	BCT-EMC024	SIGNAL GENERATOR	HP	8647A	3349A02296	2010-4-14	2011-4-13
25	BCT-EMC025	MICROWAVE AMPLIFIER	HP	8349B	2627A00994	2010-4-14	2011-4-13
26	BCT-EMC026	Triple-Loop Antenna	EVERFINE	LLA-2	607004	2010-4-14	2011-4-13
27	BCT-EMC027	CDN	FRANKONIA	M2+M3	A3027019	2010-10-20	2011-10-19
28	BCT-EMC028	6dB Attenuator	FRANKONIA	75-A-FFN-06	1001698	2010-10-20	2011-10-19
29	BCT-EMC029	EMV-Mess-Systeme GMBH	FRANKONIA	FLL-75	1020A1109	2010-10-20	2011-10-19
30	BCT-EMC030	EM Injection Clamp	FCC	F-203I-13mm	91536	2010-10-20	2011-10-19
31	BCT-EMC031	9KHz-2.4GHz Signal generator	MARCONI INSTRUMENTS	2024	112260/042	2010-10-20	2011-10-19

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
15.207	Conducted Emission	Pass
15.247(a)(1)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	Hopping Channel Separation	Pass
15.247(a)(1)	Number of Hopping Frequency Used	Pass
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass
15.247(b)(1)	Maximum Peak Output Power	Pass
15.247(d)	Band Edges Emission	Pass
15.247(d)	Spurious Radiated Emission	Pass
15.203/15.247(b)/(c)	Antenna Requirement	Pass

4 – DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

4.1 Measurement Uncertainty

All test results complied with Section 15.207 requirements. Measurement Uncertainty is 2.4 dB.

4.2 Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66～56	56～46
0.500～5.000	56	46
5.000～30.00	60	50

Note: (1)The tighter limit shall apply at the edge between two frequency bands.

4.3 EUT Setup

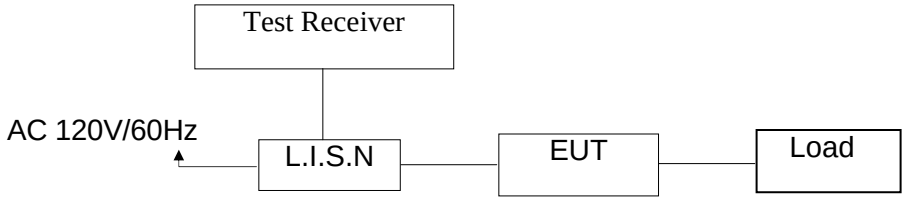
The setup of EUT is according with ANSI C63.4-2009 measurement procedure.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.



4.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range……150 KHz to 30 MHz
Detector……Peak & Quasi-Peak & Average
Sweep Speed……Auto
IF Band Width……9 KHz

4.5 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dBμV of specification limits). Quasi-peak readings are distinguished with a "**QP**". Average readings are distinguished with a "**AV**".

4.6 Test Result

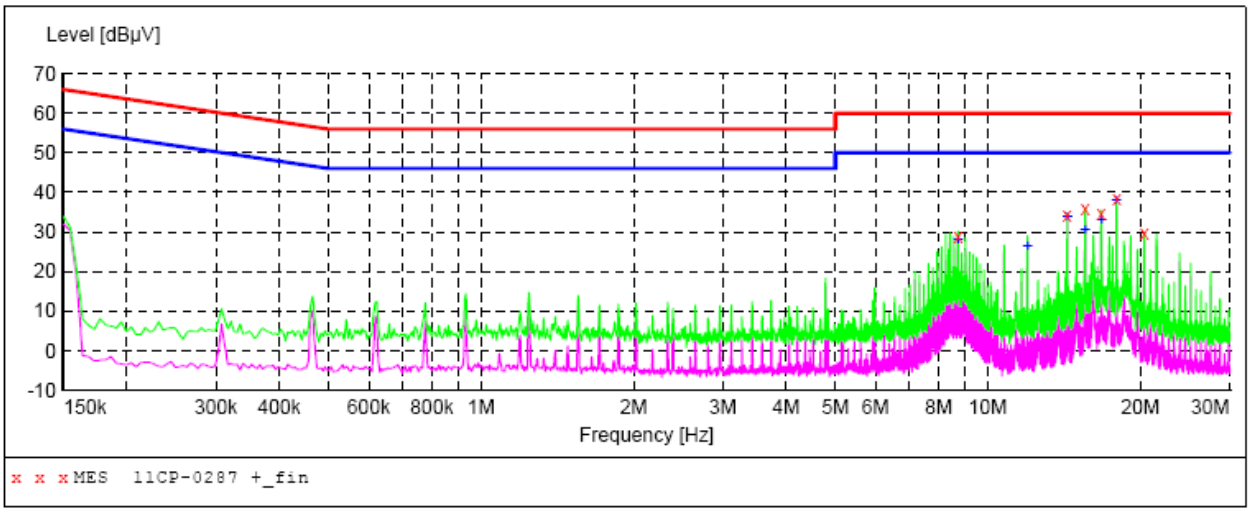
PASS

Conducted Emission Test Data

EUT:	Car Media Player	
M/N:	G2217	
Operating Condition:	Normal Operation	
Test Site:	Shielded Room	
Operator:	Cheng	
Test Specification:	DC12V	
Comment:	Live Line	
Start of Test:	3/22/11/20:11	Tem:25℃ Hum:50%

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "11CP-0287 +_fin"

3/22/2011 20:11

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
8.731500	28.90	10.7	60	31.1	QP	+	GND
14.343000	34.10	10.6	60	25.9	QP	+	GND
15.535500	35.80	10.5	60	24.2	QP	+	GND
16.728000	34.70	10.6	60	25.3	QP	+	GND
17.929500	38.40	10.6	60	21.6	QP	+	GND
20.314500	29.60	10.8	60	30.4	QP	+	GND

MEASUREMENT RESULT: "11CP-0287 +_fin2"

3/22/2011 20:11

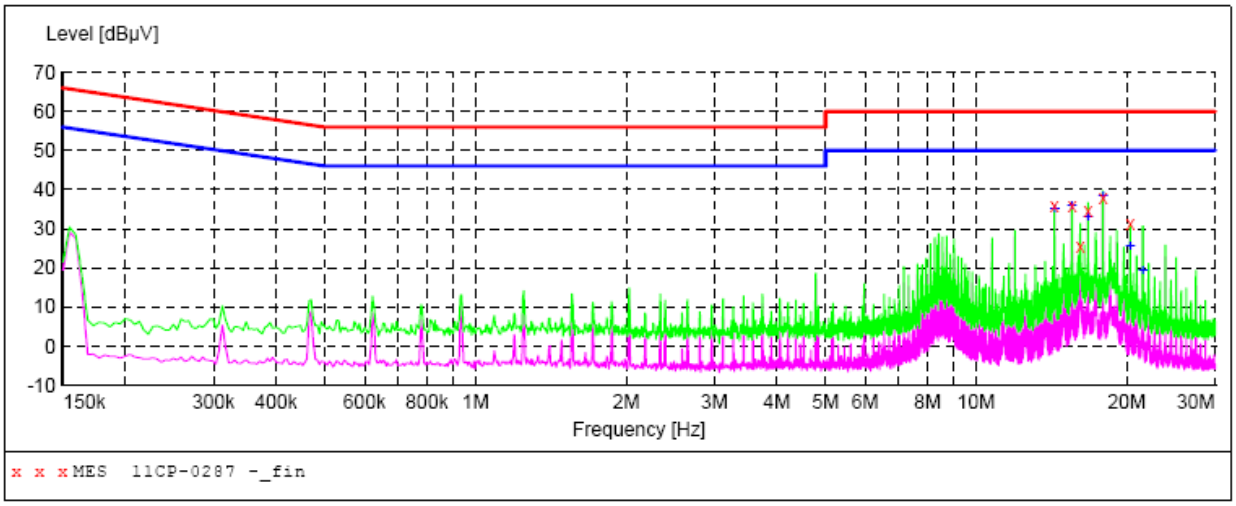
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
8.731500	28.10	10.7	50	21.9	AV	+	GND
11.953500	26.30	10.7	50	23.7	AV	+	GND
14.343000	33.80	10.6	50	16.2	AV	+	GND
15.540000	30.60	10.5	50	19.4	AV	+	GND
16.732500	32.90	10.6	50	17.1	AV	+	GND
17.925000	37.90	10.6	50	12.1	AV	+	GND

Conducted Emission Test Data

EUT:	Car Media Player	
M/N:	G2217	
Operating Condition:	Normal Operation	
Test Site:	Shielded Room	
Operator:	Cheng	
Test Specification:	DC12V	
Comment:	Neutral Line	
Start of Test:	3/22/11/20:14	Tem:25℃ Hum:50%

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "11CP-0287 -_fin"

3/22/2011 20:14

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
14.329500	35.80	10.6	60	24.2	QP	-	GND
15.526500	35.70	10.5	60	24.3	QP	-	GND
16.129500	25.70	10.5	60	34.3	QP	-	GND
16.719000	34.70	10.6	60	25.3	QP	-	GND
17.916000	38.00	10.6	60	22.0	QP	-	GND
20.296500	31.20	10.8	60	28.8	QP	-	GND

MEASUREMENT RESULT: "11CP-0287 -_fin2"

3/22/2011 20:14

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
14.329500	35.00	10.6	50	15.0	AV	-	GND
15.522000	36.10	10.5	50	13.9	AV	-	GND
16.719000	33.00	10.6	50	17.0	AV	-	GND
17.911500	38.20	10.6	50	11.8	AV	-	GND
20.301000	25.70	10.8	50	24.3	AV	-	GND
21.498000	19.20	10.8	50	30.8	AV	-	GND

5. Test of Hopping Channel Bandwidth

5.1 Applicable Standard

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.2 EUT Setup

Spectrum Analyzer

5.3 Test Equipment List and Details

See section 2.4.

5.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Set RBW of spectrum analyzer to 30KHz and VBW to 100KHz.

3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.

4. The spectrum width with level higher than 20dB below the peak level.

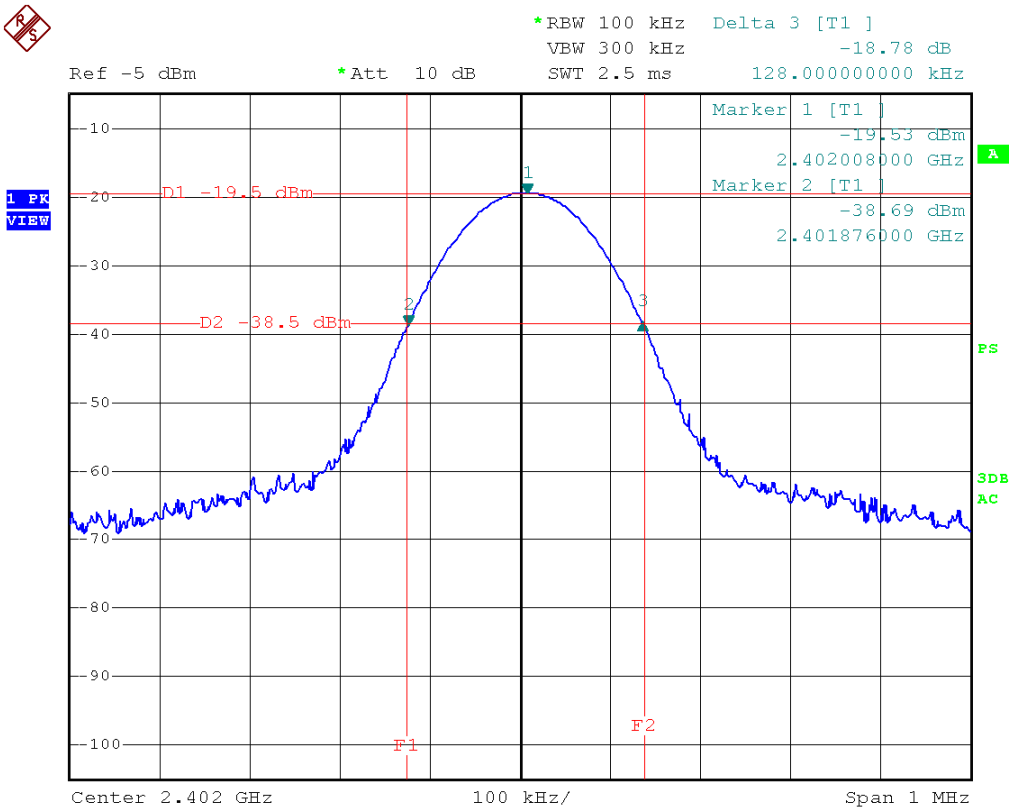
5. Repeat above 1~3 points for the middle and highest channel of the EUT.

5.5 Test Result

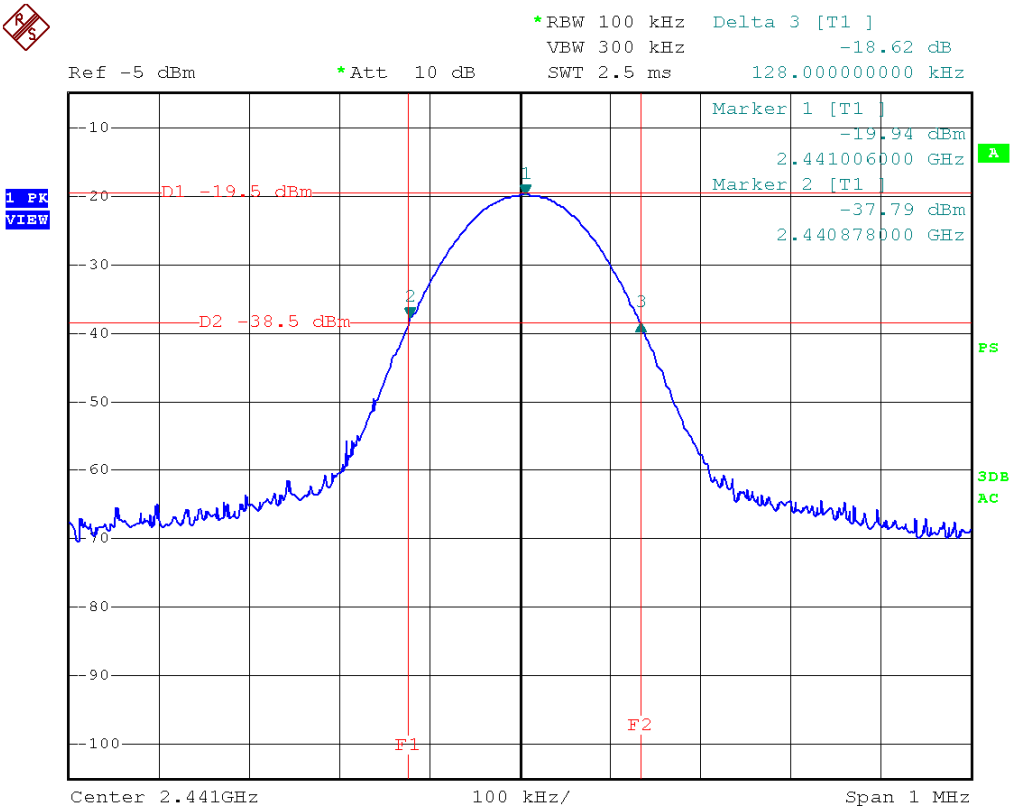
Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Tx Mode

Modulation Type	Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	Min. Limit (kHz)
FHSS	Low	2402.00	256	>25
FHSS	Middle	2441.00	256	>25
FHSS	High	2480.00	264	>25

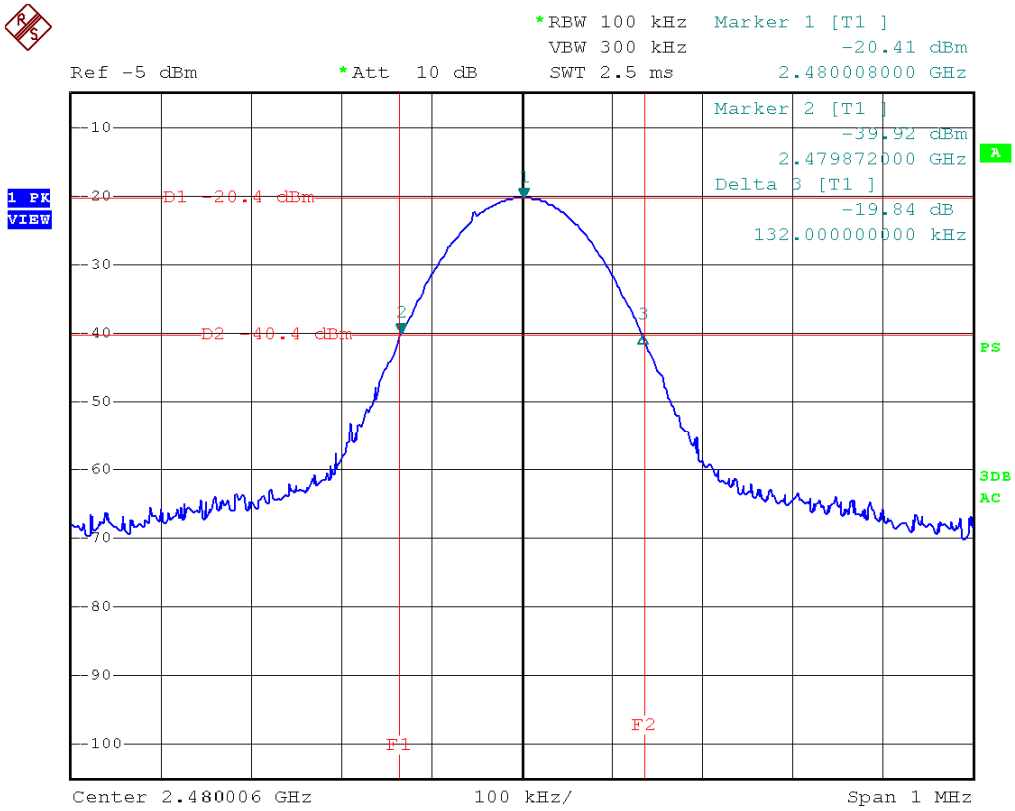
Channel Low：


*RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 3 [T1]
-18.78 dB
128.000000000 kHz
Ref -5 dBm
*Att 10 dB
Marker 1 [T1]
-19.53 dBm
2.402008000 GHz
Marker 2 [T1]
-38.69 dBm
2.401876000 GHz
1 PK
VIEW
D1 -19.5 dBm
D2 -38.5 dBm
A
PS
3DB
AC
Center 2.402 GHz
100 kHz/
Span 1 MHz

Channel Middle：



Channel High：

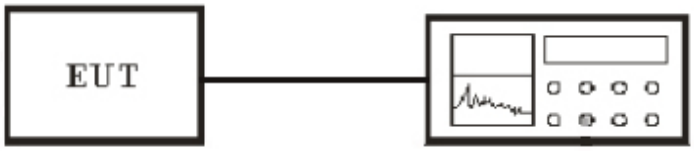


6. Test of Hopping Channel Separation

6.1 Applicable Standard

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

6.2 EUT Setup



Spectrum Analyzer

6.3 Test Equipment List and Details

See section 2.4.

6.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.

3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.

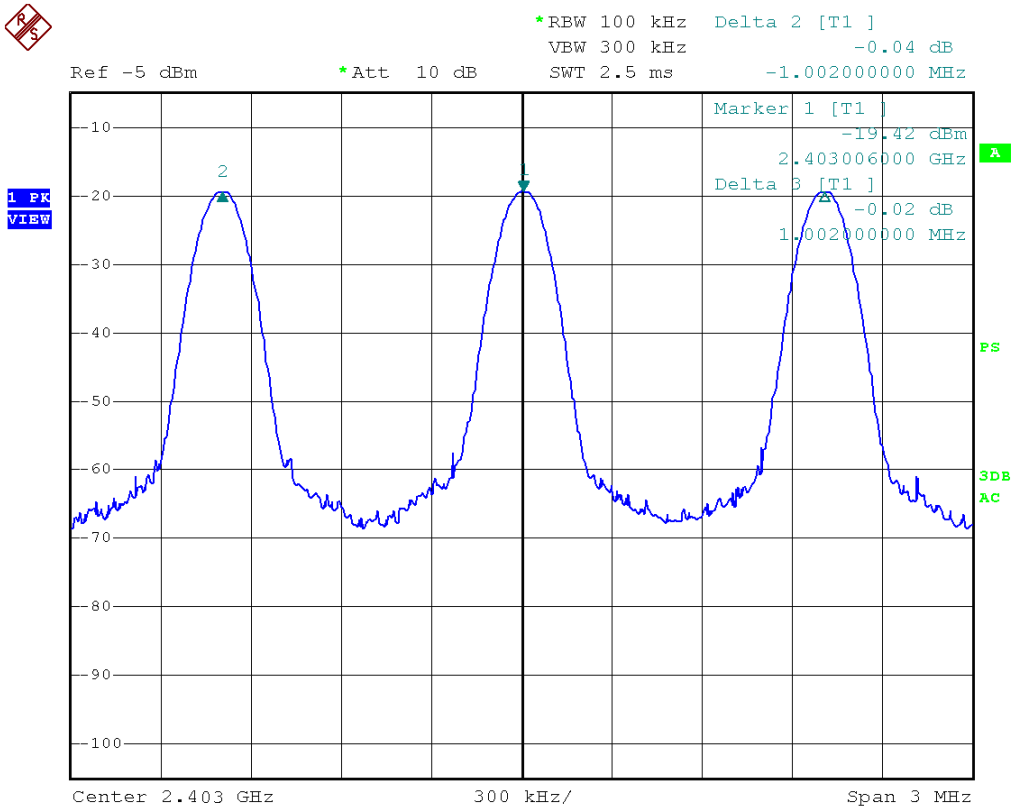
4. The Hopping Channel Separation is defined as the separation between 2 neighboring hopping frequencies.

5. Repeat above 1~3 points for the middle and highest channel of the EUT.

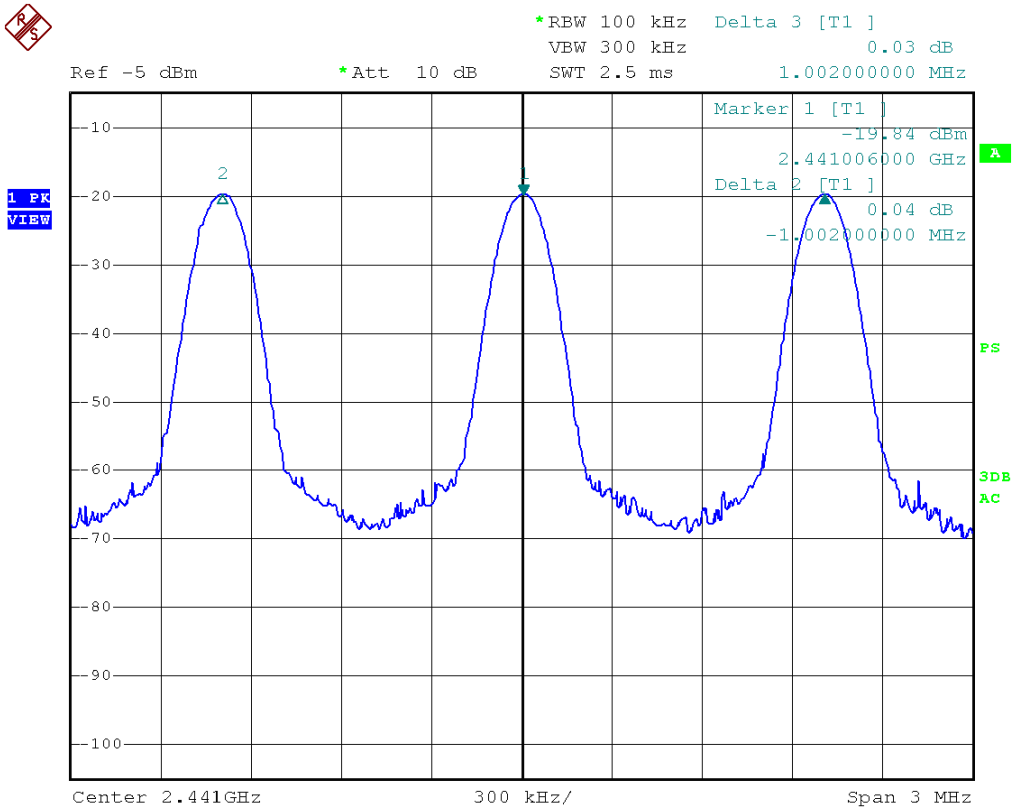
6.5 Test Result

Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Tx Mode

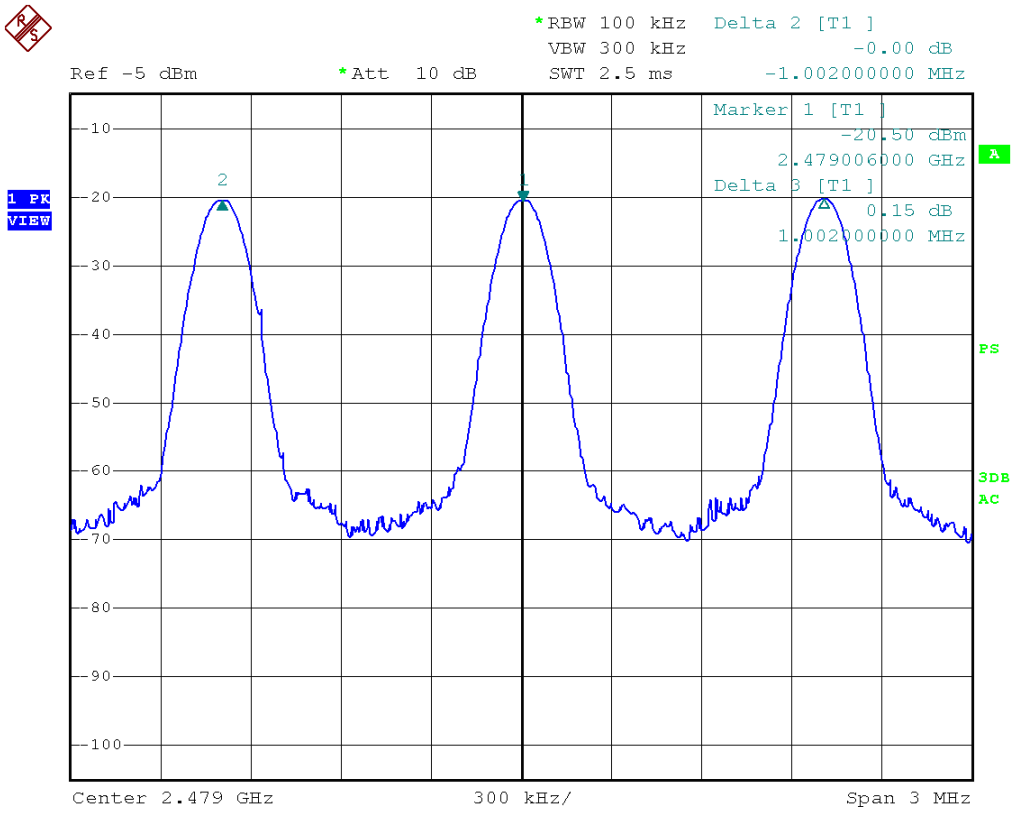
Channel Low：


*RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 2 [T1]
-0.04 dB
-1.002000000 MHz
Ref -5 dBm
*Att 10 dB
Marker 1 [T1]
-19.42 dBm
2.403006000 GHz
Delta 3 [T1]
-0.02 dB
1.002000000 MHz
1 PK
VIEW
A
PS
3DB
AC
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Center 2.403 GHz
300 kHz/
Span 3 MHz

Channel Middle：



Channel High：

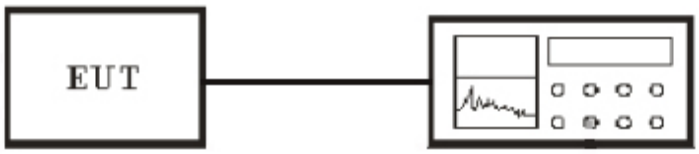


7. Test of Number of Hopping Frequency

7.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 15 non-overlapping hopping channels. Frequency hopping system which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping system may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

7.2 EUT Setup



Spectrum Analyzer

7.3 Test Equipment List and Details

See section 2.4.

7.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.

3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.

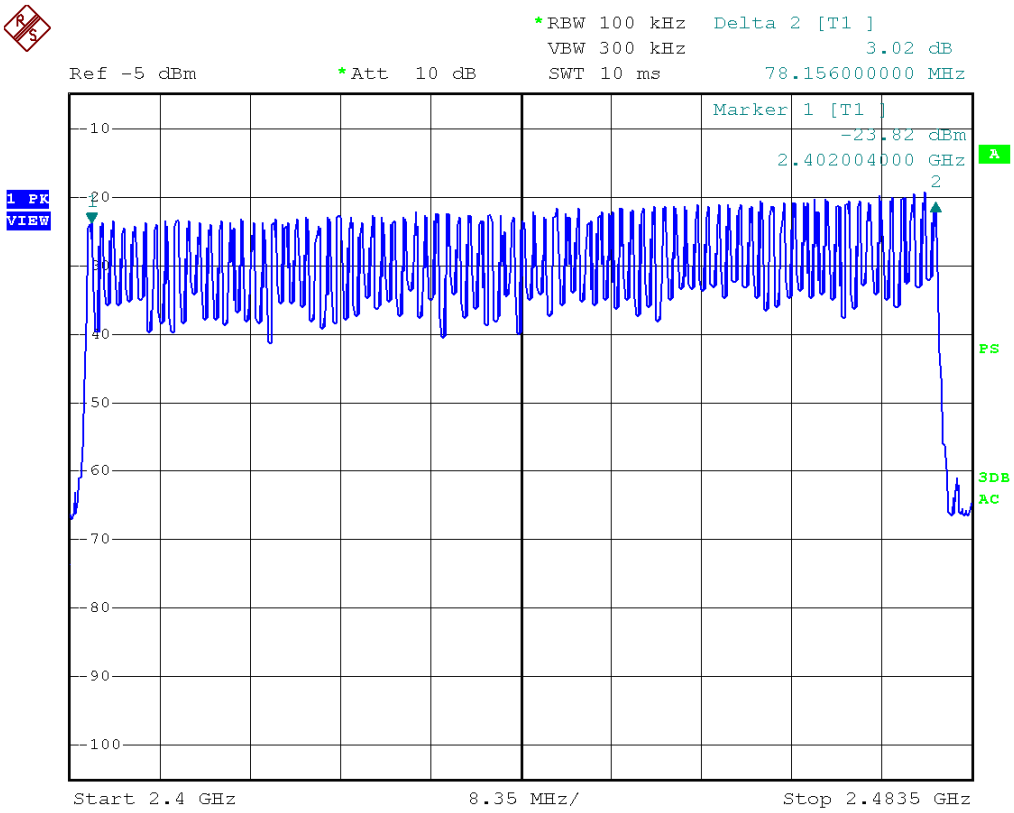
4. Observe frequency hopping in 2400MHz~2483.5MHz, there are at least 32 non-overlapping channels.

5. Repeat above 1~3 points for the middle and highest channel of the EUT.

7.5 Test Result

Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Tx Mode

Modulation Type	Frequency (MHz)	Number of Hopping Channels	Min. Limit (kHz)
FHSS	2402.0~2480.0	79	>15

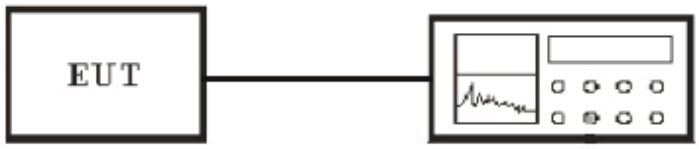

*RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Delta 2 [T1]
3.02 dB
78.156000000 MHz
Ref -5 dBm
*Att 10 dB
Marker 1 [T1]
-23.82 dBm
2.402004000 GHz
1 PK
VIEW
A
PS
3DB
AC
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Start 2.4 GHz
8.35 MHz/
Stop 2.4835 GHz

8. Test of Dwell Time of Each Frequency

8.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4seconds multiplied by the number of hopping channels employed.

8.2 EUT Setup



Spectrum Analyzer

8.3 Test Equipment List and Details

See section 2.4.

8.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Set RBW of spectrum analyzer to 1000kHz and VBW to 1000kHz.

3. Set Detector to Peak, Trace to Max Hold and Sweep Time is more than once pulse time.

4. Set the center frequency on any frequency would be measure and set the frequency span to zero span.

5. Measure the maximum time duration of one single pulse.

8.5 Test Result

Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Tx Mode

Modulation Type	Channel No.	Frequency (MHz)	Dwell Time (ms)	Limit (ms)
FHSS	Low	2402.00	115.20	400
FHSS	Middle	2441.00	119.04	400
FHSS	High	2480.00	119.04	400

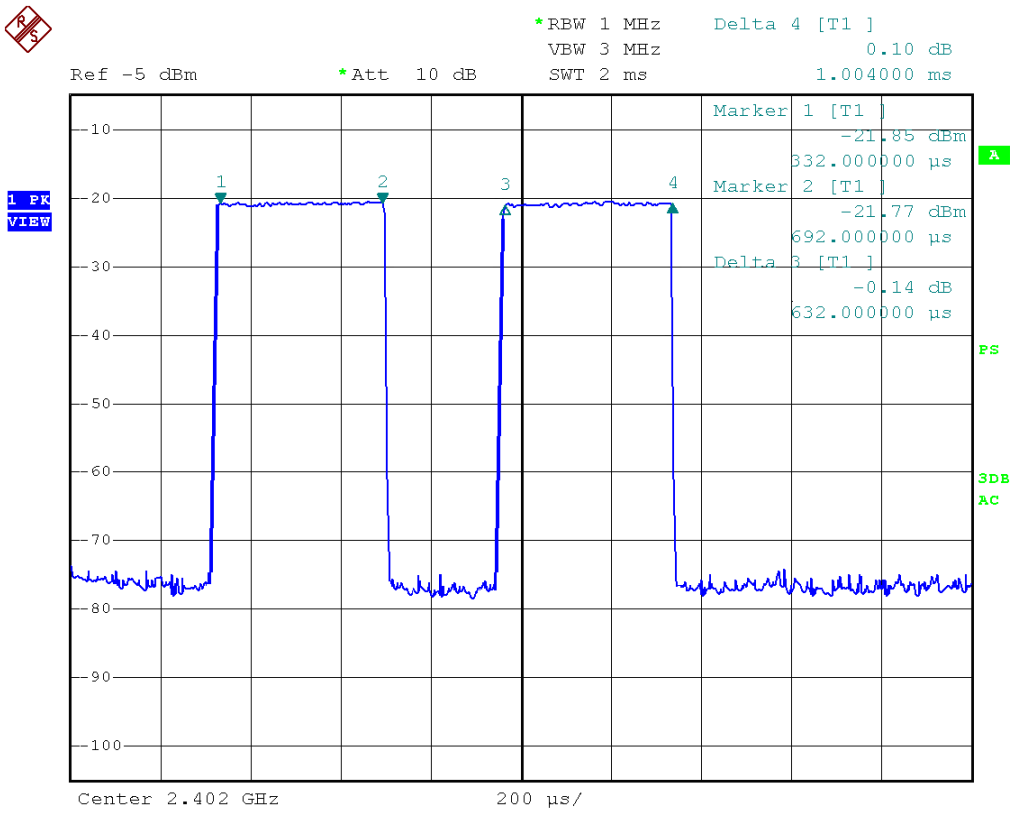
A period time = 0.4 (ms) * 79 = 31.6 (s)
CH Low:
DH1 time slot = 0.360 (ms) * (1600/(2*79)) * 31.6 = 115.20 (ms)

CH Mid:
DH1 time slot = 0.372 (ms) * (1600/(2*79)) * 31.6 = 119.04 (ms)

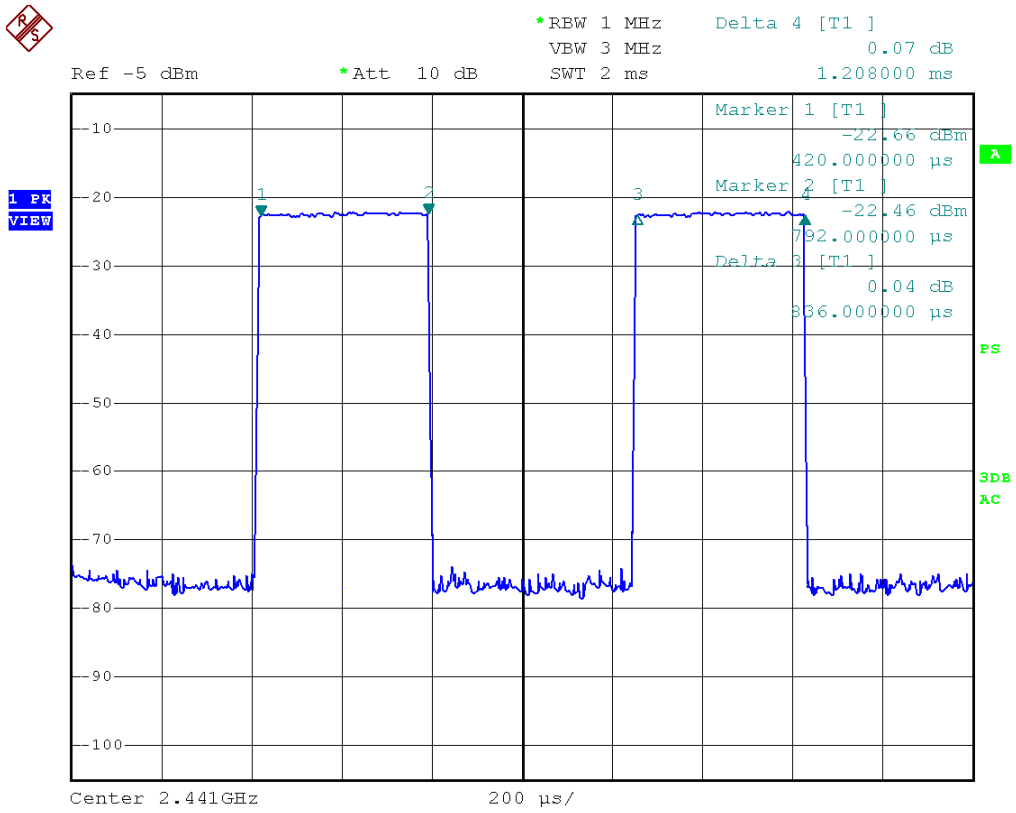
CH High:
DH1 time slot = 0.372 (ms) * (1600/(2*79)) * 31.6 = 119.04 (ms)

.

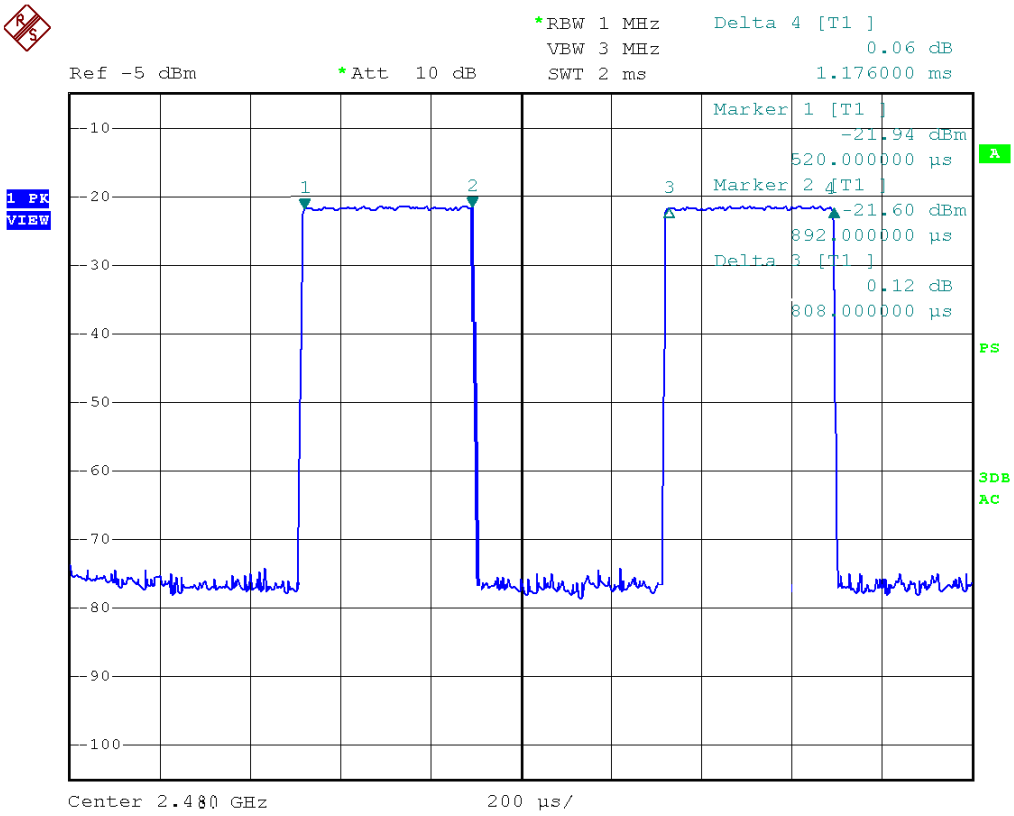
Channel Low：


*RBW 1 MHz
VBW 3 MHz
SWT 2 ms
Delta 4 [T1]
0.10 dB
1.004000 ms
Ref -5 dBm
*Att 10 dB
Marker 1 [T1]
-21.85 dBm
332.000000 µs
Marker 2 [T1]
-21.77 dBm
692.000000 µs
Delta 3 [T1]
-0.14 dB
632.000000 µs
1 PK
VIEW
A
PS
3DB
AC
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Center 2.402 GHz
200 µs/

Channel Middle：



Channel High：

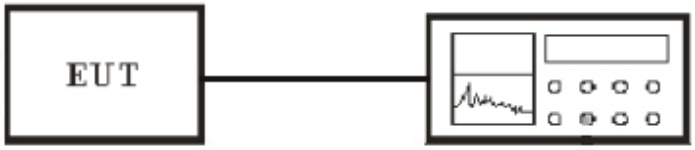


9. Test of Maximum Peak Output Power

9.1 Applicable Standard

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels and The maximum peak output power shall not exceed 1 watt. For all other frequency hopping systems in this frequency band, The maximum peak output power shall not exceed 0.125 watt.

9.2 EUT Setup



Spectrum Analyzer

9.3 Test Equipment List and Details

See section 2.4.

9.4 Test Procedure

1. The transmitter output was connected to the peak power meter and recorded the peak value.

2. Peak power meter parameter set to auto attenuator and filter is the same as.

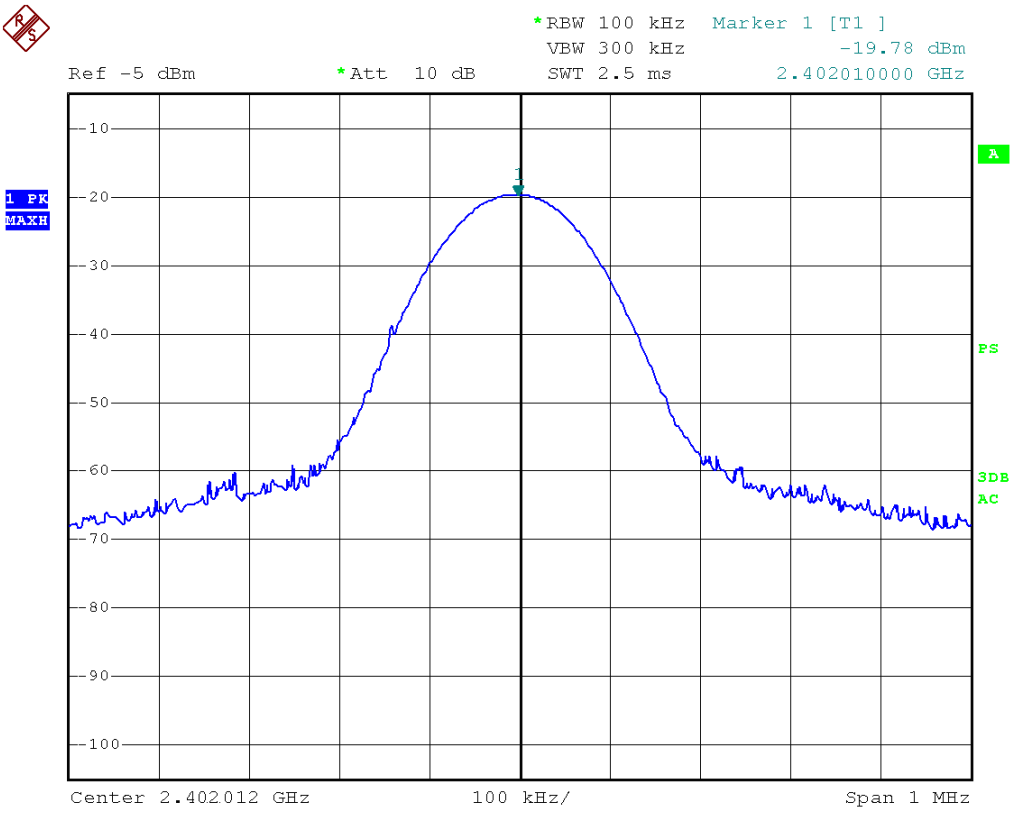
3. Repeated the 1 for the middle and highest channel of the EUT.

9.5 Test Result

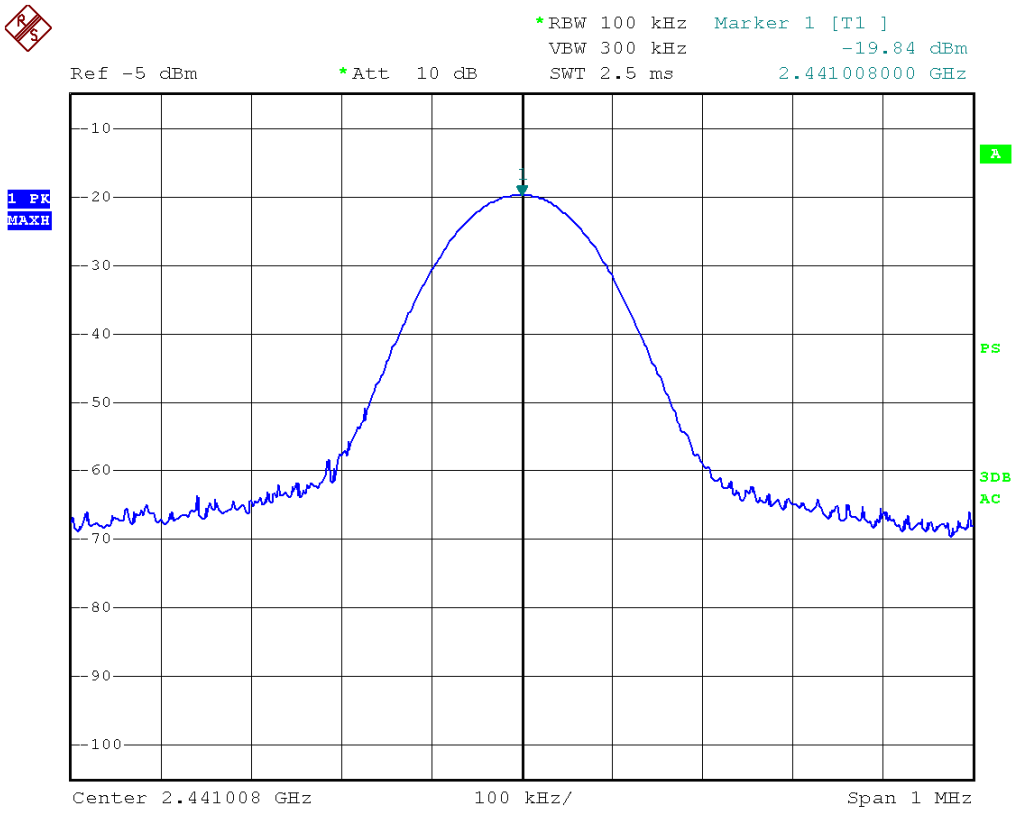
Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Tx Mode

Modulation Type	Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)	Margin (dB)
FHSS	Low	2402.00	-19.78	30	49.78
FHSS	Middle	2441.00	-19.84	30	49.84
FHSS	High	2480.00	-20.72	30	50.72

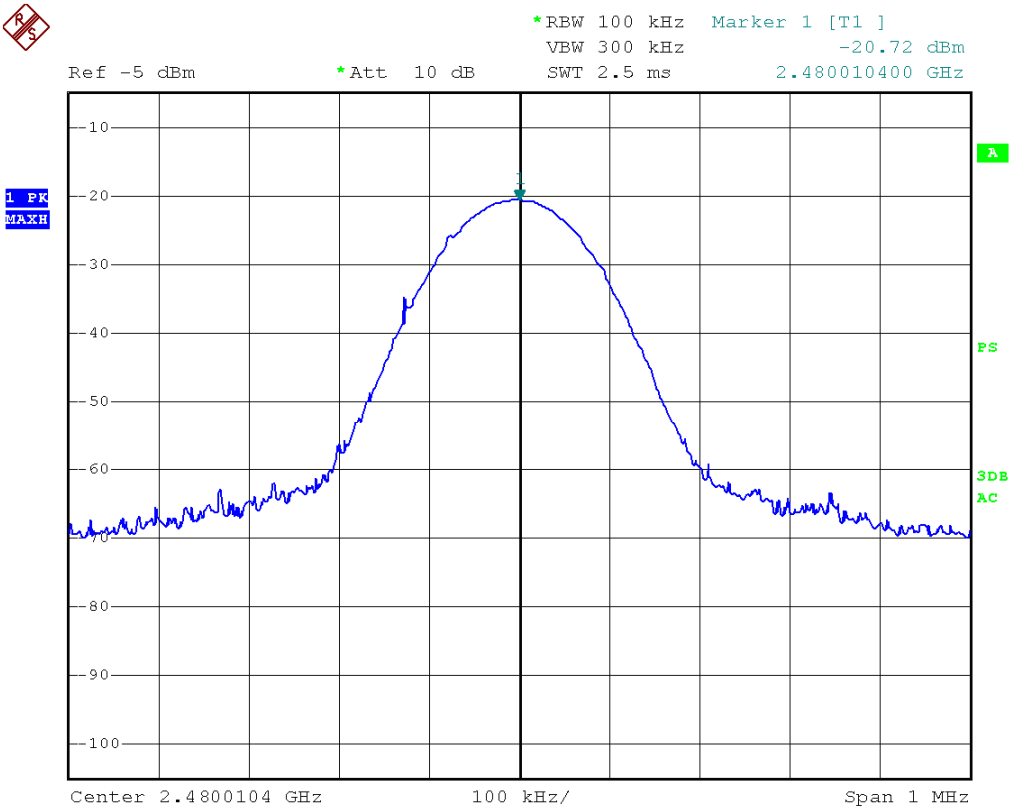
Channel Low：


*RBW 100 kHz
Marker 1 [T1]
VBW 300 kHz
-19.78 dBm
Ref -5 dBm
*Att 10 dB
SWT 2.5 ms
2.402010000 GHz
1 PK
MAXH
A
PS
3DB
AC
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Center 2.402012 GHz
100 kHz/
Span 1 MHz

Channel Middle：



Channel High：



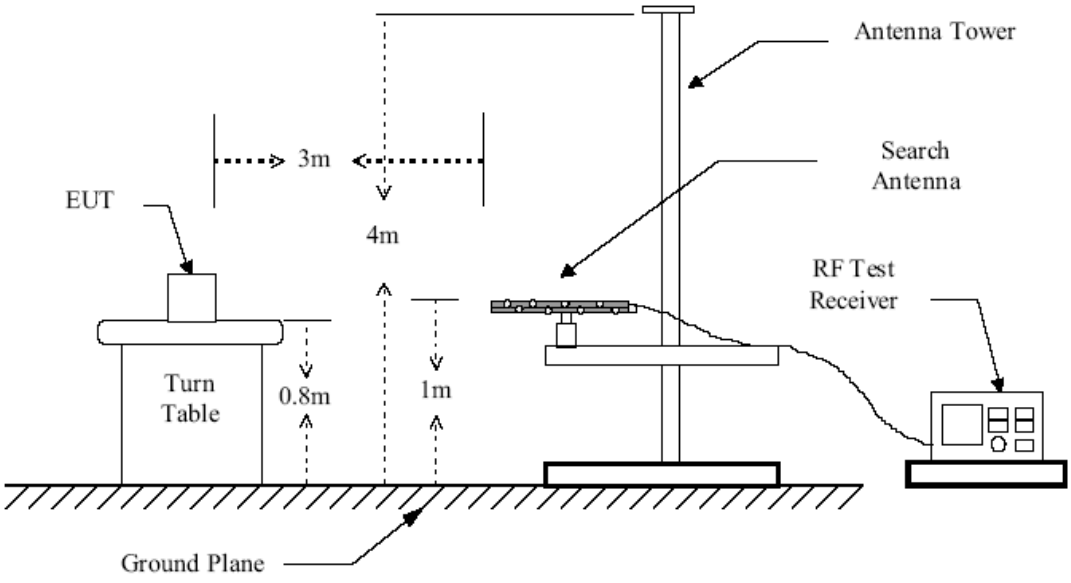
10. Test of Band Edges Emission

10.1 Applicable Standard

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

10.2 EUT Setup

Radiated Measurement Setup



Conducted Measurement Setup

Spectrum Analyzer

10.3 Test Equipment List and Details

See section 2.4.

10.4 Test Procedure

Conducted Measurement

1. The transmitter is set to the lowest channel.

2. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.

3. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 100MHz bandwidth from lower band edge. Then detector set to peak and max hold this trace.

4. The lowest band edges emission was measured and recorded.

5. The transmitter set to the highest channel and repeated 2~4.

Radiated Measurement

1. Configure the EUT according to ANSI C63.4-2009

2. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.

4. For band edge emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.

5. For band edge emission, use 1MHz VBW and 1MHz RBW for reading under AV and use 1MHz VBW and 1MHz RBW for reading under PK.

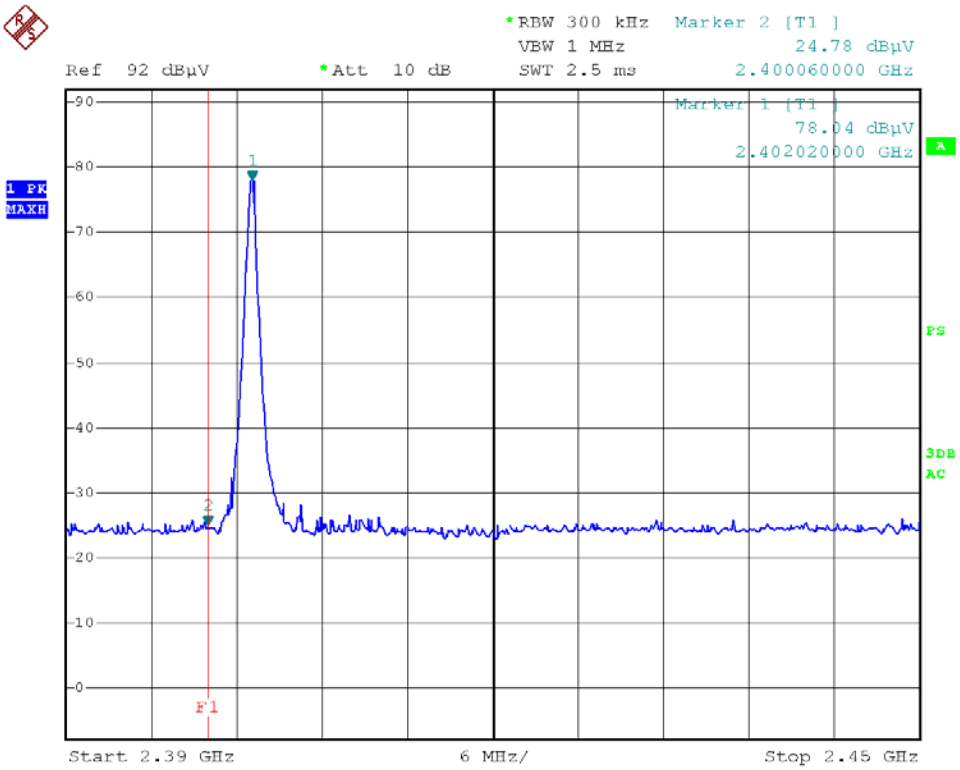
10.5 Test Result

Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Tx Mode

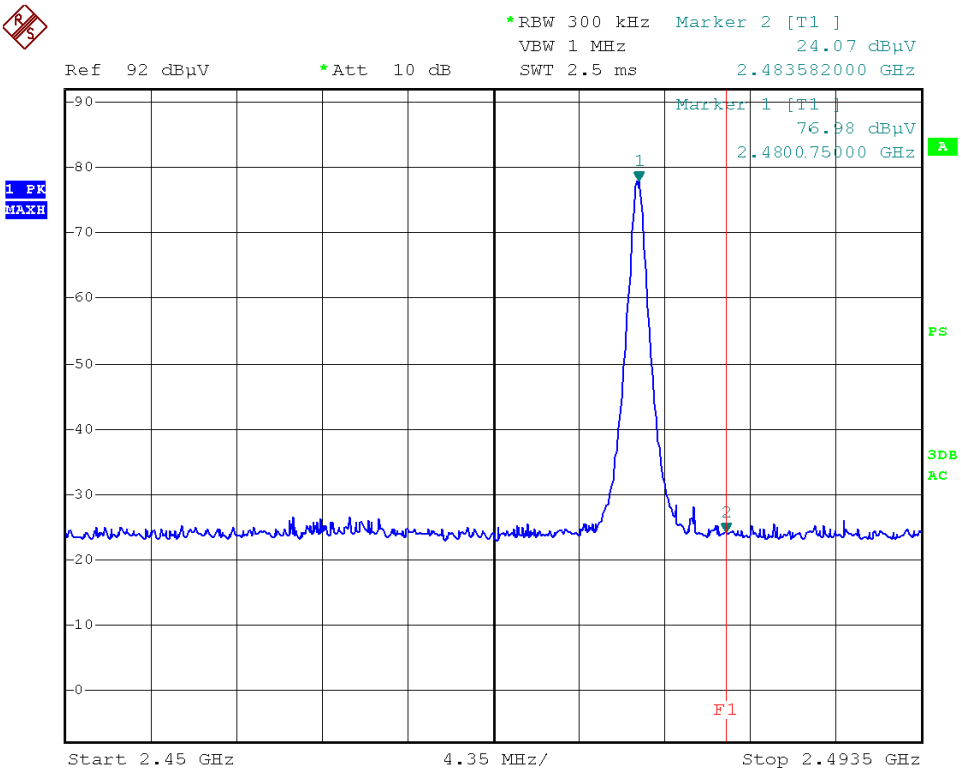
Radiated Test Result

Frequency(MHz)
<2400
>2483.5

The worst frequency range of Low Channel



The worst frequency range of High Channel



11. Test of Spurious Radiated Emission

11.1 Applicable Standard

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

11.2 EUT Setup

Radiated Measurement Setup

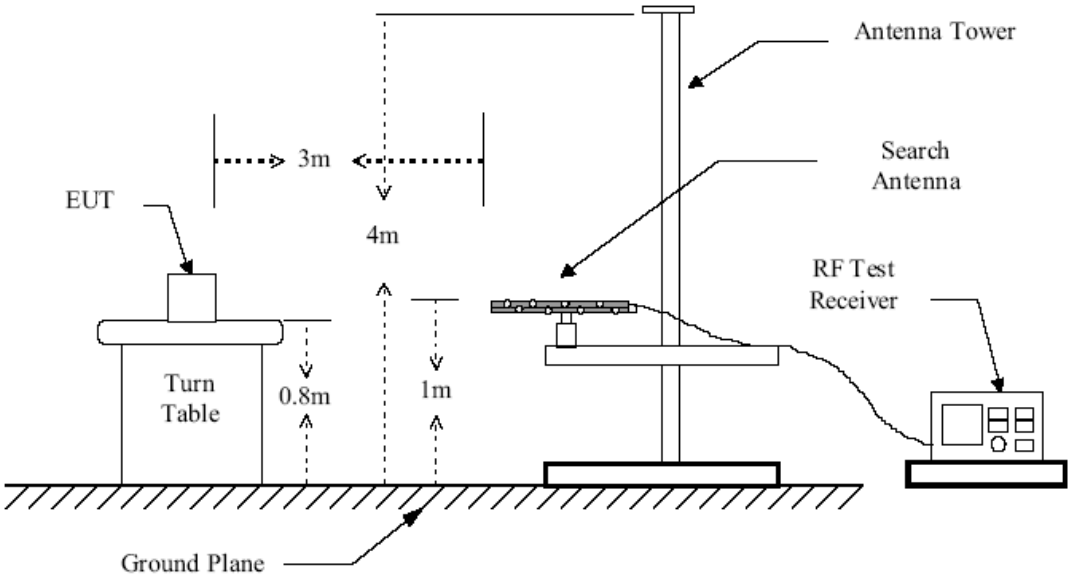


Figure 1 : Frequencies measured below 1 GHz configuration

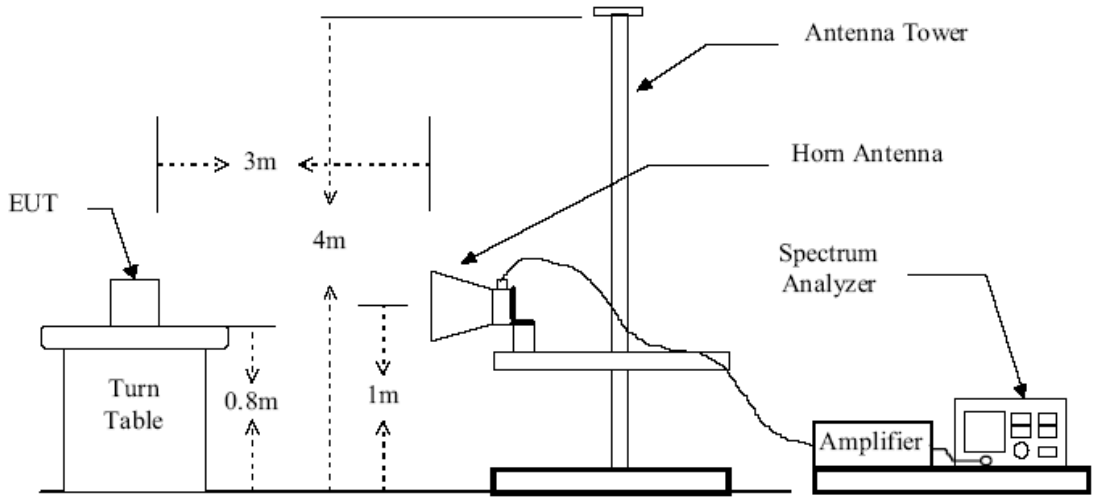


Figure 2 : Frequencies measured above 1 GHz configuration

Conducted Measurement Setup

Spectrum Analyzer

11.3 Test Equipment List and Details

See section 2.4.

11.4 Test Procedure

Radiated Measurement

1. Configure the EUT according to ANSI C63.4-2009

2. The EUT was placed on the top of the turntable 0.8 meter above ground.

3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

4. Power on the EUT and all the supporting units.

5. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.

7. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.

8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

Conducted Measurement

1. For emission above 1GHz,conducted measurement method is used.

2. The transmitter is set to the lowest channel.

3. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.

4. Set RBW to 1 MHz and VBW to 3 MHz, Then detector set to peak and max hold this trace.

5. The lowest band edges emission was measured and recorded.

6. The transmitter set to the highest channel and repeated 2~4.

11.5 Test Result

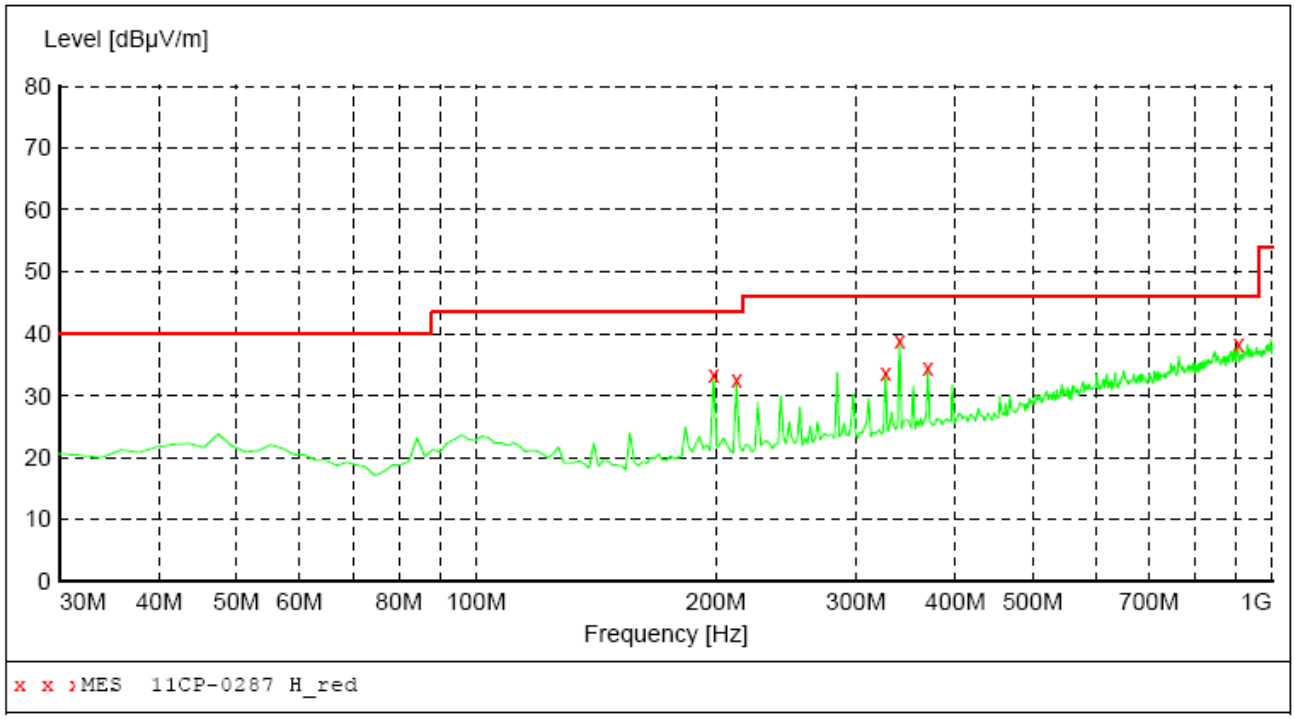
Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Normal operation

Spurious Emission (30~1000MHz)

EUT:	Car Media Player
M/N:	G2217
Operating Condition:	Normal Operation
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 12 V
Comment:	Polarization: Horizontal
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "11CP-0287 H_red"

3/23/2011 21:12

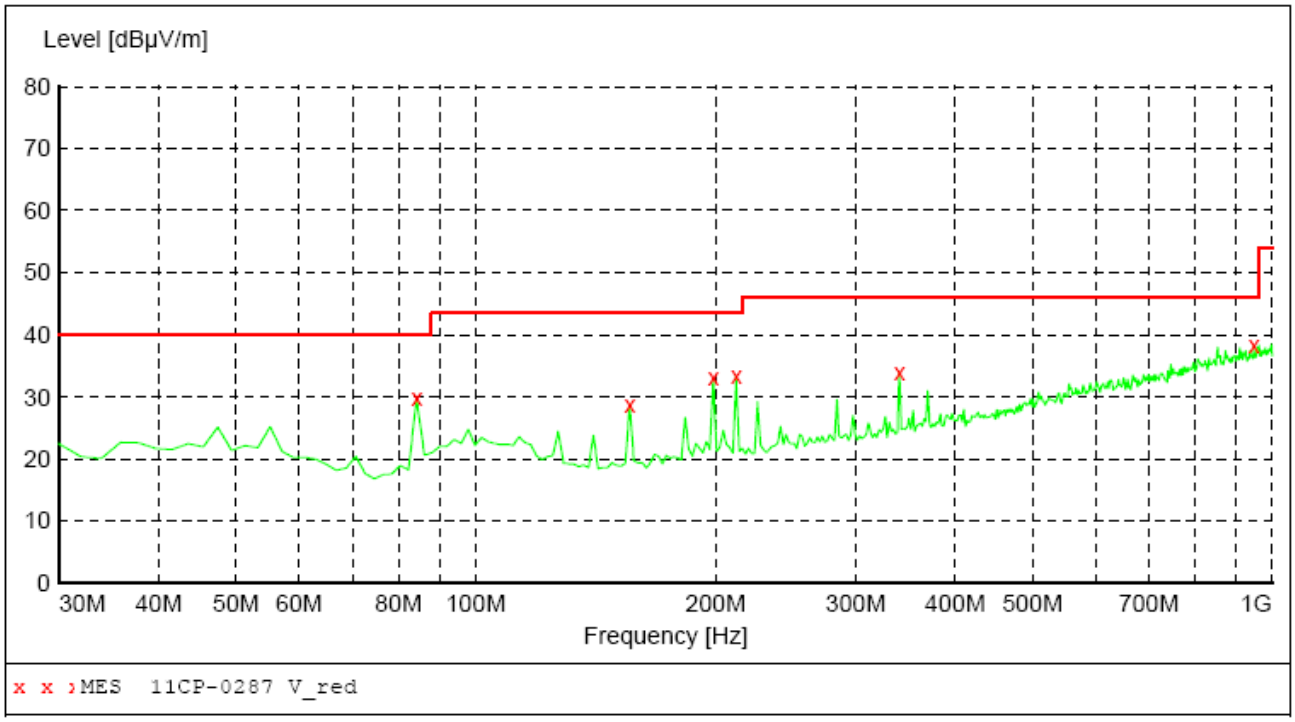
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
198.780000	33.30	16.1	43.5	10.2	QP	100.0	0.00	HORIZONTAL
212.360000	32.50	16.1	43.5	11.0	QP	100.0	0.00	HORIZONTAL
326.820000	33.80	19.5	46.0	12.2	QP	300.0	0.00	HORIZONTAL
340.400000	39.00	20.2	46.0	7.0	QP	100.0	0.00	HORIZONTAL
369.500000	34.50	20.8	46.0	11.5	QP	100.0	0.00	HORIZONTAL
906.880000	38.40	31.3	46.0	7.6	QP	300.0	0.00	HORIZONTAL

Spurious Emission (30~1000MHz)

EUT:	Car Media Player
M/N:	G2217
Operating Condition:	Normal Operation
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 12V
Comment:	Polarization: Vertical
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "11CP-0287 V_red"

3/23/2011 21:09

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
84.320000	29.80	14.1	40.0	10.2	QP	100.0	0.00	VERTICAL
156.100000	28.80	13.6	43.5	14.7	QP	100.0	0.00	VERTICAL
198.780000	33.00	16.1	43.5	10.5	QP	100.0	0.00	VERTICAL
212.360000	33.40	16.1	43.5	10.1	QP	100.0	0.00	VERTICAL
340.400000	34.00	20.2	46.0	12.0	QP	100.0	0.00	VERTICAL
947.620000	38.30	31.7	46.0	7.7	QP	100.0	0.00	VERTICAL

Above 1G

Channel Low								
Maximum Frequency (MHz)	Polarity and Level					Limit (dBμV/m)	Margin (dBμV/m)	Mark (P/Q/A)
	Polarity	Height (m)	Reading dBμV	Transd	Result dBμV/m			
2402.01	H	1.00	25.1	24.8	94.2	114	19.8	P
			21.5	24.8	92.9	94	1.1	A
2402.01	V	1.00	20.3	25.1	92.3	114	21.7	P
			25.2	25.1	91.5	94	2.5	A
4804.03	H	1.00	23.8	24.2	48.0	74.0	26	P
			19.5	24.2	43.7	54.0	10.3	A
4804.03	V	1.00	25.1	24.2	49.3	74.0	24.7	P
			21.5	24.2	45.9	54.0	28.9	A
7206.05	H	1.00	24.0	24.8	48.8	74.0	25.2	P
			20.3	24.8	45.1	54.0	8.9	A
7206.05	V	1.00	25.2	24.8	50	74.0	24.0	P
			21.7	24.8	46.5	54.0	7.5	A
9608.06	H	1.00	22.2	25.1	47.3	74.0	26.7	P
			16.8	25.1	41.9	54.0	12.1	A
9608.06	V	1.00	22.3	25.1	47.4	74.0	26.6	P
			19.1	25.1	44.2	54.0	9.8	A
12010.07	---		---	---	---	---	---	
14412.08	---		---	---	---	---	---	
16814.09	---		---	---	---	---	---	
19216.11	---		---	---	---	---	---	
21618.12	---		---	---	---	---	---	
24020.13	---		---	---	---	---	---	

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier
Margin = Level-Limit
Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value
2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.
4. The test limit distance is 3m limit

Channel Mid								
Maximum Frequency (MHz)	Polarity and Level					Limit (dBμV/m)	Margin (dBμV/m)	Mark (P/Q/A)
	Polarity	Height (m)	Reading dBμV	Transd	Result dBμV/m			
2441.02	H	1.00	19.3	24.3	92.3	114	21.7	P
			26.3	24.3	91.9	94	2.1	A
2441.02	V	1.00	22.7	24.8	91.8	114	22.2	P
			18.7	24.8	90.8	94	3.2	A
4882.05	H	1.00	24.2	24.3	48.5	74.0	25.5	P
			19.1	24.3	43.4	54.0	10.6	A
4882.05	V	1.00	24.6	24.3	48.9	74.0	25.1	P
			20.4	24.3	44.7	54.0	9.3	A
7323.07	H	1.00	25.8	24.8	50.6	74.0	23.4	P
			19.3	24.8	44.1	54.0	9.9	A
7323.07	V	1.00	26.3	24.8	51.1	74.0	22.9	P
			22.7	24.8	47.5	54.0	6.5	A
9764.10	H	1.00	18.7	25.0	43.7	74.0	30.3	P
			18.8	25.0	53.8	54.0	10.2	A
9764.10	V	1.00	19.3	25.0	44.3	74.0	29.7	P
			16.9	25.0	41.9	54.0	12.1	A
12205.11	---		---	---	---	---	---	
14646.13	---		---	---	---	---	---	
17087.14	---		---	---	---	---	---	
19528.16	---		---	---	---	---	---	
21969.20	---		---	---	---	---	---	
24410.21	---		---	---	---	---	---	

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier
Margin = Level-Limit
Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value
2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.
4. The test limit distance is 3m limit

Channel High								
Maximum Frequency (MHz)	Polarity and Level					Limit (dBμV/m)	Margin (dBμV/m)	Mark (P/Q/A)
	Polarity	Height (m)	Reading dBμV	Transd	Result dBμV/m			
2.480.01	H	1.00	25.1	24.8	88.5	114	25.5	P
			21.5	24.8	87.9	94	6.1	A
2.480.01	V	1.00	20.3	25.1	92.3	114	21.7	P
			25.2	25.1	91.5	94	2.5	A
4960.02	H	1.00	25.2	24.0	49.2	74.0	24.8	P
			21.8	24.0	45.8	54.0	8.2	A
4960.02	V	1.00	25.7	24.0	49.7	74.0	24.3	P
			22.9	24.0	46.9	54.0	7.1	A
7440.03	H	1.00	25.2	25.2	50.4	74.0	23.6	P
			19.1	25.2	44.3	54.0	9.7	A
7440.03	V	1.00	27.6	25.2	52.8	74.0	21.2	P
			20.1	25.2	45.3	54.0	8.7	A
9920.04	H	1.00	18.5	24.9	43.4	74.0	30.6	P
			16.4	24.9	41.3	54.0	12.7	A
9920.04	V	1.00	22.4	24.9	47.3	74.0	26.7	P
			19.9	24.9	44.8	54.0	9.2	A
12400.05	---		---	---	---	---	---	
14880.06	---		---	---	---	---	---	
17360.07	---		---	---	---	---	---	
19840.08	---		---	---	---	---	---	
22320.09	---		---	---	---	---	---	
24800.10	---		---	---	---	---	---	

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier
Margin = Level-Limit
Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value
2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.
4. The test limit distance is 3m limit

12. Test of Peak Power Spectral Density

12.1 Applicable Standard

According to §15.247(d), for direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3kHz band during any time interval of continuous transmission.

12.2 EUT Setup

Spectrum Analyzer

12.3 Test Equipment List and Details

See section 2.4.

12.4 Test Procedure

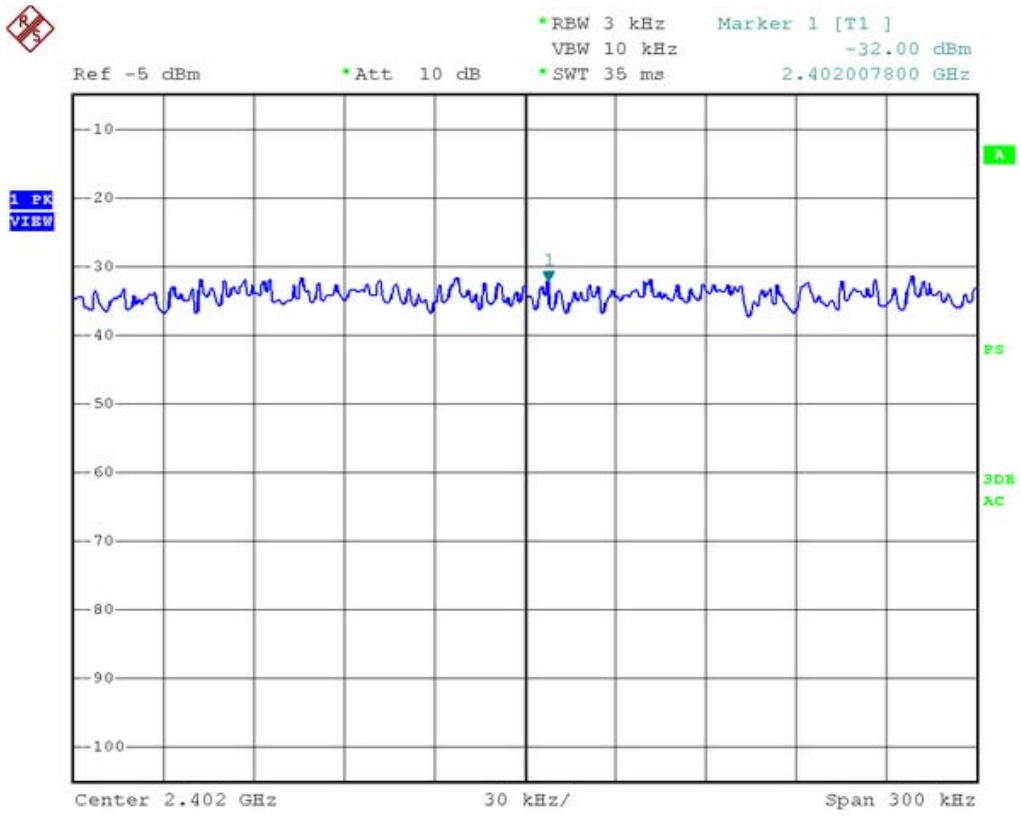
1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 3KHz, VBW = 10KHz, Span = 300KHz, Sweep=100s
4. Record the max. reading.
5. Repeat above procedures until all frequency measured were complete.

12.5 Test Result

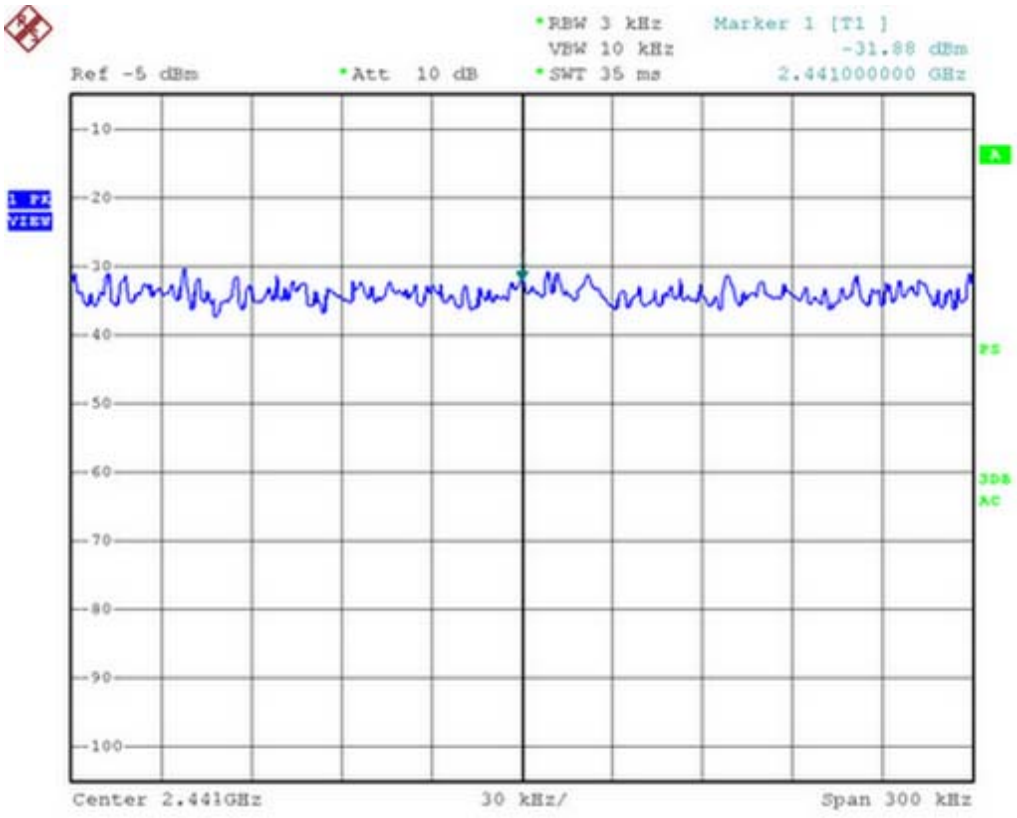
Temperature (℃) : 22~23	EUT: Car Media Player
Humidity (%RH): 50~54	M/N: G2217
Barometric Pressure (mbar): 950~1000	Operation Condition: Tx Mode

CH	RF Power Density Reading (dBm)	Cable loss (dB)	RF Power Density Level (dBm)	Maximum Limit (dBm)
Low	-32.00	1.20	-30.80	8
Mid	-31.88	1.20	-30.68	8
High	-32.09	1.20	-30.89	8

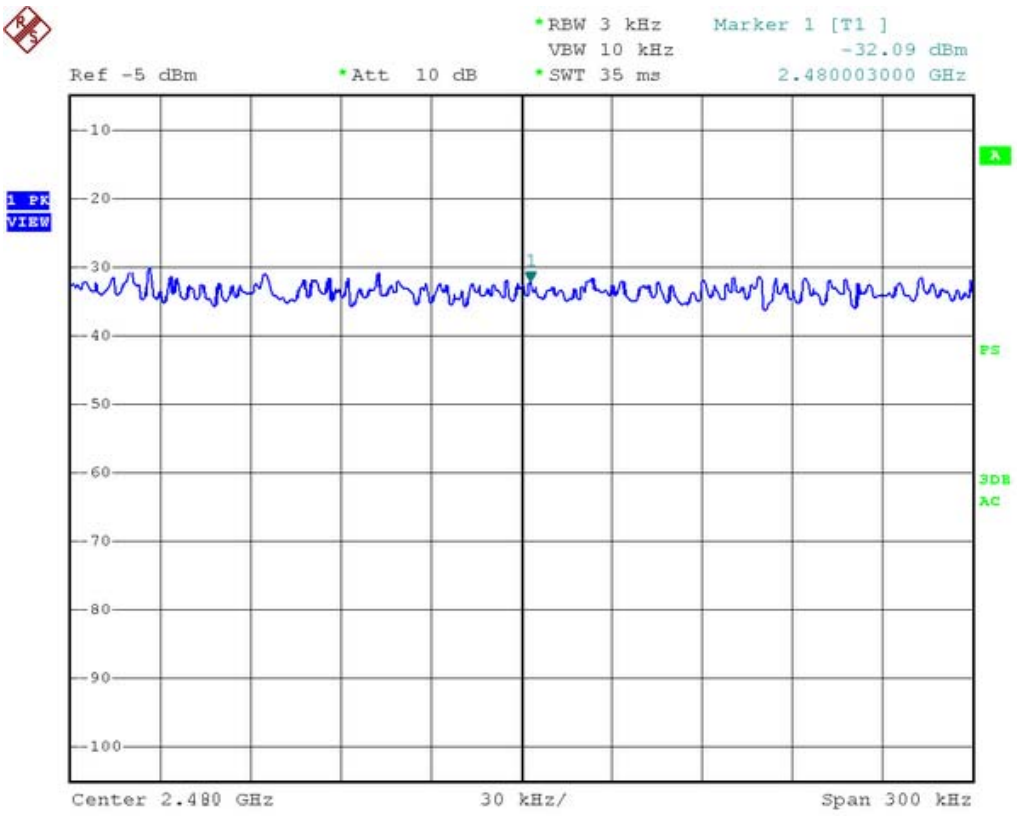
Channel Low：



Channel Mid：


*RBW 3 kHz
VBW 10 kHz
*SWT 35 ms
Marker 1 [T1]
-31.88 dBm
2.441000000 GHz
Ref -5 dBm
*Att 10 dB
10
20
30
40
50
60
70
80
90
100
1 PK
VIEW
A
RS
3DB
AC
Center 2.441GHz
30 kHz/
Span 300 kHz

Channel High：



13. ANTENNA REQUIREMENT

13.1 Standard Applicable

Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Section 15.247(b)/(c):

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If the intentional radiator is used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

13.2 Antenna Connected Construction

The antenna connector is designed with permanent attachment and no consideration of replacement.